DETAILED ACTION

Response to Amendment

1. In the light of a conversion with Mr. Andrew Dorisio, the final rejection mailed on 5/26/2009 will be withdrawn and a new office action is set forth. Upon further review of affidavit, the filed affidavit is not sufficient to overcome the reference of Yan (see below), but the applicant's argument regarding Yan is persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

2. The affidavit filed on 2/13/2009 under 37 CFR 1.131 has been considered but is ineffective to overcome the reference of Yan et al (U.S. 6,797,908).

According to MPEP 715.04, the following parties may make an affidavit of declaration under 37 CFR 1.131:

(A) **All the inventors** of the subject matter claimed.

(B) An affidavit or declaration by less than all named inventors of an application is accepted where it is shown that less than all named inventors of an application invented the subject matter of the claim or claims under rejection. For example, one of two joint inventors is accepted where it is shown that one of the joint inventors is the sole inventor of the claim or claims under rejection.

In addition, as in MPEP 715.02, the 37 CFR 1.131 affidavit or declaration must establish possession of either the whole invention claimed or something falling within the claim (such as a species of a claimed genus), in the sense that the claim as a whole reads on it.

3. The affidavit under 37 CRF 1.131 is currently signed only by Dongping Tao, a co-inventor of the present application. Moreover, the chamber including an inlet and an outlet does not clearly show in the Exhibit A and Exhibit B. Therefore, the affidavit is insufficient to overcome the reference of Yan. The amendment filed on 2/13/2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: claim 3 is amended to "the chamber is generally annular". The instant specification supports the description of "the chamber is generally cylindrical (page 3 line 14)" and "the charging chamber 14 has an annular space (page 5 line 25-27)". Figure2 shows that the rotor 18 is mounted within the cylindrical chamber and the annular space in the charging chamber 14 is created between the rotor 18 and the cylindrical chamber. However, the instant specification does not support the description of "a rotor mounted in the chamber" and "the chamber is annular" as cited in amended claim 3 because the drawing shows that the rotor 18 is mounted co-axially with the cylindrical chamber to create an annular space that is served as the charging chamber 14, but the rotor 18 is not mounted in the annular space of the charging chamber 14.

Applicant is required to cancel the new matter in the reply to this Office Action.

4. Newly added claims 22-32 are acknowledged.

Response to Arguments

5. Applicant's arguments, see REMARKS filed 2/13/2009, with respect to the rejection(s) of claim(s) 1-11 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Applicants point out that Yan teaches a corona source as a charging source, rather than the drum itself; and the grounded outer drum of Yan is not able to charge particles. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 112

6. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant specification supports the description of "the chamber is generally cylindrical (page 3 line 14)" and "the charging chamber 14 has an annular space (page 5 line 25-27)". Figure2 shows that the rotor 18 is mounted within the cylindrical chamber and the annular space in the charging chamber 14 is created between the rotor 18 and the cylindrical chamber. However, the instant specification does not support the description of "a rotor mounted in the chamber" as cited in claim 1 and "the chamber is annular" as cited in amended claim 3 because the drawing shows that the rotor 18 is co-axial with the cylindrical chamber to create an annular space, not within the annular space of the charging chamber 14.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. As cited in claim 3, "the chamber is generally annular" constitutes indefinite subject matter. The instant specification describes that the charging chamber 14 has an annular space while the chamber where the rotor 18 is mounted within is cylindrical. It is not clear if applicant refers "the chamber "" as cited in claim 3 as the annular space of the charging chamber or it is the same "the chamber" where the rotor is mounted as cited in claim 1. Therefore, appropriate correction is required. For the purpose of examination, "the chamber" as cited in claim 3 is interpreted as the same chamber as cited in claim 1, which is generally cylindrical as supported by the instant description.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1-4, 7-11, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Altman et al (cited in IDS) in view of Ebert (U.S. 3,744,218).

14. Regarding claims 1 and 30, Altman et al disclose an electrostatically enhanced separator (EES) (ABSTRACT) and a two-stage EES with an ionizing unit 28 (Figure 8; col. 6, line 45-46). The two stage EES comprises an ionizing unit 28 for charging particles. The ionizing unit 28 includes: (1) a cylindrical vessel 29 having an inlet 30 for admitting solid particles (Figure 8; col. 6, line 52-53) and an outlet 32 for discharging the charged particles (Figure 8; col. 7, line 1-2); (2) an discharge electrode 19 positioned at the center of vessel 29 (Figure 8; col. 6, line 57-58) for charging particles (col. 6, line 63-64); and (3) an electrostatically enhanced separator device 10 downstream of ionizing unit 28 (Figure 8, col. 6, line 45-47).

Altaman indicates to incorporate gas jets 31 along the ionizing unit 28 axis to minimize corona suppression (col. 6, line 65-67), but does not teach the discharge

electrode 19 for charging particles being rotatable. However, Ebert discloses an electrostatic cleaner for cleaning gas through ionization (ABSTRACT). Ebert teaches an electrostatic ionizing apparatus having an enclosure (Figure 1& 2; col. 2, line 60-65) and discharge electrode 24 which can rotate via a rotary base 32 (Figure 2; col. 3, line 18-24) and particles being charged by a corona discharge generated between the electrode 24 and the inside wall 14 (col. 3, line 35-42). Ebert further teaches that a more homogeneous high potential electrostatic field can be produced by rotating the discharge electrode, hence improving charging efficiency (col. 3, line 65-67). Therefore, it would be obvious for one having ordinary skill in the art to rotate the discharge electrode of Altaman as suggested by Ebert in order to create homogenous high electrostatic filed for better charging particles. As a result, the rotatable discharge electrode can serve as a rotor.

15. Regarding claim 2, Altaman teaches that the discharge electrode 19 can be in the form of rod (col. 6, line 1-5), reads on the instant claim.

16. Regarding claim 3, the vessel 29 of Altaman is cylindrical (Figure 8; col. 6, line 53), reads on the instant claim.

17. Regarding claim 4, the outlet 32 of Altaman is positioned opposite to the inlet 31 (Figure 8).

18. Regarding claim 7, Ebert teaches a motor 36 to drive the rotary base 32 (Figure 2; col. 3, line 19-20), reads on the instant claim.

19. Regarding claim 8, the rotation speed is an operational parameter and it does not further limit the apparatus claim. Moreover, manner of operating the device does not differentiate apparatus claim from the prior art (see M.P.E.P. 2114).

20. Regarding claim 9, Altaman teaches that an electric field is generated between the discharge electrode 19 and the wall 17 (col. 6, line 58-59 & col. 5, line 18-22), reads on the instant claim.

21. Regarding claim 10, the electric field of Altaman is generated between the discharge electrode 19 and the wall 17 from a power supply (col. 6, line 58-59 & col. 5, line 18-22), reads on the instant claim.

22. Regarding claim 11, the two-stage EES of Altaman includes an ionizing unit 28 and individual EES 10 (Figure 8; col. 46-47), reads on the instant claim.

23. Regarding claims 31 and 32, the cylindrical vessel 29 of Altaman inherently has an outer wall (Figure 8). Altaman teaches that discharge electrode 19 may be in the form of rod (col. 6, line 1-5), while the vessel 29 is cylindrical (Figure 8; col. 6, line 53); thus the configurations of the discharge electrode 19 and the vessel 29 conform each other.

24. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Altman et al (cited in IDS) and Ebert (U.S. 3,744,218) as applied to claim 1 above, and further in view of Stencel et al (U.S. 6,498,313).

25. Regarding claim 5, Altaman/Ebert fails to teach a partition projecting into the chamber. However, Stencel et al disclose an electrostatic separation apparatus. The apparatus comprises a chamber 38 including an electric field zone (Figure 3; col. 8, line

33-34) and a partition 50 telescoping into the chamber 38 (Figure 3; col. 11, line 15-18). Stencel further indicates that the partition 50 can adjustably vary the length of electric field zone in the chamber 38 for improving efficiency (col. 22-35). Therefore, it would be obvious for one having ordinary skill in the art to include a partition as suggested by Stencel in the chamber of Altaman/Ebert in order to enhance charging/separation efficiency.

26. Regarding claim 6, Stencel also teaches that the partition 50 can move to adjust the length of electric filed zone in the chamber 38 Figure 3; col. 11, line 15-20 & col. 3, line 65-67), reads on the instant claim.

27. Claims 22 , and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Altman et al (cited in IDS) in evidence of applicant admitted prior art (AAPA, page 2 line 2-14 of the instant specification).

28. Regarding claim 22, Altman et al disclose an electrostatically enhanced separator (EES) (ABSTRACT) and a two-stage EES with an ionizing unit 28 (Figure 8; col. 6, line 45-46). The two stage EES comprises an ionizing unit 28 for charging particles. The ionizing unit 28 includes: (1) a cylindrical vessel 29 having an inlet 30 for admitting solid particles (Figure 8; col. 6, line 52-53) and an outlet 32 for discharging the charged particles (Figure 8; col. 7, line 1-2); and (2) an discharge electrode 19 positioned at the center of vessel 29 (Figure 8; col. 6, line 57-58) for charging particles (col. 6, line 63-64). As is evident by the teaching of AAPA, it is known in the art that frictional charging can be achieved by sliding or rubbing particles against a solid surface (page 2 line 2-14 of the instant specification). Thus, when the fluid flow containing

particles is introduced into the ionizing vessel 29, particles rub against the electrode surface and particles will be frictionally charged. Therefore, the discharge electrode can be served as a means for frictionally charging particles when particles contact with the surface of the electrode.

29. Regarding claim 26, the rotation speed is an operational parameter and it does not further limit the apparatus claim. Moreover, manner of operating the device does not differentiate apparatus claim from the prior art (see M.P.E.P. 2114).

30. Regarding claim 27, Altaman teaches that an electric field is generated between the discharge electrode 19 and the wall 17 (col. 6, line 58-59 & col. 5, line 18-22), reads on the instant claim.

31. Regarding claim 28, the electric field of Altaman is generated between the discharge electrode 19 and the wall 17 from a power supply (col. 6, line 58-59 & col. 5, line 18-22), reads on the instant claim.

32. Regarding claim 29, the two-stage EES of Altaman includes an ionizing unit 28 and individual EES 10 (Figure 8; col. 46-47), reads on the instant claim.

33. Claim 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Altman et al (cited in IDS) as applied to claim 22 above, and further in view of Ebert (U.S. 3,744,218).

34. Regarding claim 23, Altaman does not teach the discharge electrode 19 for charging particles being rotatable. However, Ebert discloses an electrostatic cleaner for cleaning gas through ionization (ABSTRACT). Ebert teaches an electrostatic ionizing apparatus having an enclosure (Figure 1& 2; col. 2, line 60-65) and discharge electrode

24 which can rotate via a rotary base 32 (Figure 2; col. 3, line 18-24) and particles being charged by a corona discharge generated between the electrode 24 and the inside wall 14 (col. 3, line 35-42). Ebert further teaches that a more homogeneous high potential electrostatic field can be produced by rotating the discharge electrode, hence improving charging efficiency (col. 3, line 65-67). Therefore, it would be obvious for one having ordinary skill in the art to rotate the discharge electrode of Altaman as suggested by Ebert in order to create homogenous high electrostatic filed for better charging particles. As a result, the rotatable discharge electrode can serve as a rotor

35. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Altman et al (cited in IDS) as applied to claim 22 above, and further in view of Stencel et al (U.S. 6,498,313).

36. Regarding claim 24, Altaman fails to teach a partition projecting into the chamber. However, Stencel et al disclose an electrostatic separation apparatus. The apparatus comprises a chamber 38 including an electric field zone (Figure 3; col. 8, line 33-34) and a partition 50 telescoping into the chamber 38 (Figure 3; col. 11, line 15-18). Stencel further indicates that the partition 50 can adjustably vary the length of electric field zone in the chamber 38 for improving efficiency (col. 22-35). Therefore, it would be obvious for one having ordinary skill in the art to include a partition as suggested by Stencel in the chamber of Altaman in order to enhance charging/separation efficiency.

37. Regarding claim 25, Stencel also teaches that the partition 50 can move to adjust the length of electric filed zone in the chamber 38 Figure 3; col. 11, line 15-20 & col. 3, line 65-67), reads on the instant claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuyu Tai whose telephone number is 571-270-1855. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. T./
Examiner, Art Unit 1795

6/10/2009

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795